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> IAU COLLOQUIUM 172 - NAMUR - 6-11 JULY 1998
> THE IMPACT OF MODERN DYNAMICS IN ASTRONOMY
>
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>
>CONTRIBUTION: I wish to contribute
> an oral presentation: YES
>
>Title of the proposed contribution: TORQUES IN PLANETARY RINGS
>
>Abstract: (From 150 words to one page; for math and other symbols use the
>TeX conventions)
>
Gravitational torques are important contributors to the morphology of rings whose mass and brightness are dominated by large particles (> 1 cm). Those torques include the viscous torques associated with collisions between particles, the gravitational torques exerted by satellites at resonance locations, the gravitational torques exerted by satellites orbiting near a ring's edge, and the gravitational torques exerted by elliptical or inclined ringlets on a nearby ring. In the last few years, it was discovered that the gravitational torque exerted by a satellite at a Lindblad resonance not only can give rise to a density wave or open a gap, but also can, in certain conditions, form a narrow ring and shepherd it. Even more recently, it was discovered that an elliptical narrow ring embedded in a gap is able to exert a significant effect on the surrounding ring. This is for example the case for the ringlet and gap at 1.470 Rs in Saturn's C ring. This talk will review results obtained in the last two decades, major unsolved problems which are still eluding us, and prospects for future work on the subject of torques in planetary rings.

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